Deactivation of Shock Sensitive Chemicals in Oak Ridge

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Bechtel Jacobs Company LLC

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Deactivation of Shock Sensitive Chemicals in Oak Ridge

Organization and Source

- 3 Sites, 3 Contractors, 3 Missions, 2 Contract Types
- Multiple Subcontractors and Reindustrialization tenants on site
- Chemicals from past operations and lab cleanup
- Bechtel Jacobs is EM Contractor for all 3 OR sites

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Stored Rad Chemicals may be Shock Sensitive

- Chemicals have accumulated over time
- Multiple items can be in a container or drum
- Identification of container contents is insufficient to accurately define the waste
- Deactivation activity impact to other on site employers and employees is major concern
- Definitive shock sensitive criteria doesn't exist

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CONTAINER ID	EST. QTY. Kgs	100% M	FACILITY	TNT EQUIV Lbs	MATERIAL Kg
K25C9302048	223.00	527.58	7507W	0.4	**223** (Unknown solvent overpack)
K25C9905751	136.00	447.40	7507W	0.4	**136.0** (Product w/ 100% THF)
X10C9800070	103.00	407.82	K-1065-D	0.4	**103.0** (peroxides, K/Naperiodate)
K25C9302144	48.00	316.18	7507W	0.4	**48.0** (Manuf. Product with MEKP)
X10C9500361	25.50	256.07	K-1036-A	0.4	**25.5** (Drum with nitro/nitrate cmpd.)
X10C9802993	24.50	252.68	K-1036-A	0.4	**24.5** (Drum with perchloric acid soln)
K25C9836508	20.00	236.15	K-1036-A	0.4	**20.0** (55 gal. Drum of Ether solution)
X10C9401913	14.22	213.36	K-1036-A	11.4	**14.75** (1 cntr THF/2 cntrs 1,4-dioxane)
X10CH00600J	9.00	180.97	7653 (G-Bay)	0.4	**9.0** (container with lithium)
X10C0012380	8.00	174.00	7653	5.63	**8.0** (Container of diethyl ether)
X10CH00600Q	8.00	174.00	7653 (G-Bay)	0.4	**8.0** (Container of NAK in mineral oil)
K25C9308511	2.10	111.41	K-711	1.09	**2.1** (Ether, cumene, 2-pentanol)
Y12C9809991	2.00	109.61	9720-31	12.3	**2.0** ($MgClO_4$, $SrNO_3$, $NH_4Cr_2O_4$)

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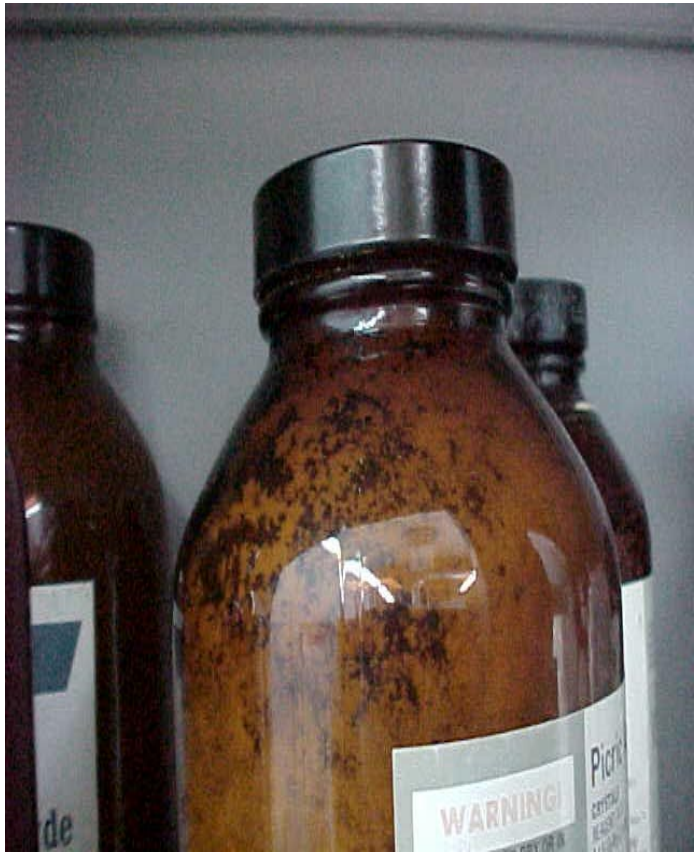

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Source of Shock Sensitive Screening Criteria

- MSDS
- Generator or Storage personnel observation
- Reference manuals
- Past experience
- Watch lists
- Actual peroxide test results

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Inventory

- Sort of data base identified 57,000 potential items in 22,800 containers in 20 storage areas
- 2nd refined sort resulted in identifying 563 items in 268 containers in 14 buildings as potential shock sensitive items
- Visual examinations and peroxide tests will be required for final determination

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Mitigation

- Safety evaluations for storage and deactivation
- Plan development for handling and deactivation
- Outside resources and input
  - DOE
  - Commercial and Universities
- Equipment specification, design and procurement
- SER and Readiness Concurrence

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Mitigation (Continued)

- Notification and communication of plans
- Evacuations as necessary
- Implement hands-on inspection, deactivation and package for shipment to TSDRF
- Clean-up and debrief

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Deactivation Plan

- Isolate, monitor vapors and temperature, access item for identity, test for external peroxides
- Treat external peroxides and transfer to mobile unit for manual or remote opening and treat internal peroxides
- Dilute and add inhibitor to TSDRF WAC and test for peroxide
- Package and ship to TSDRF

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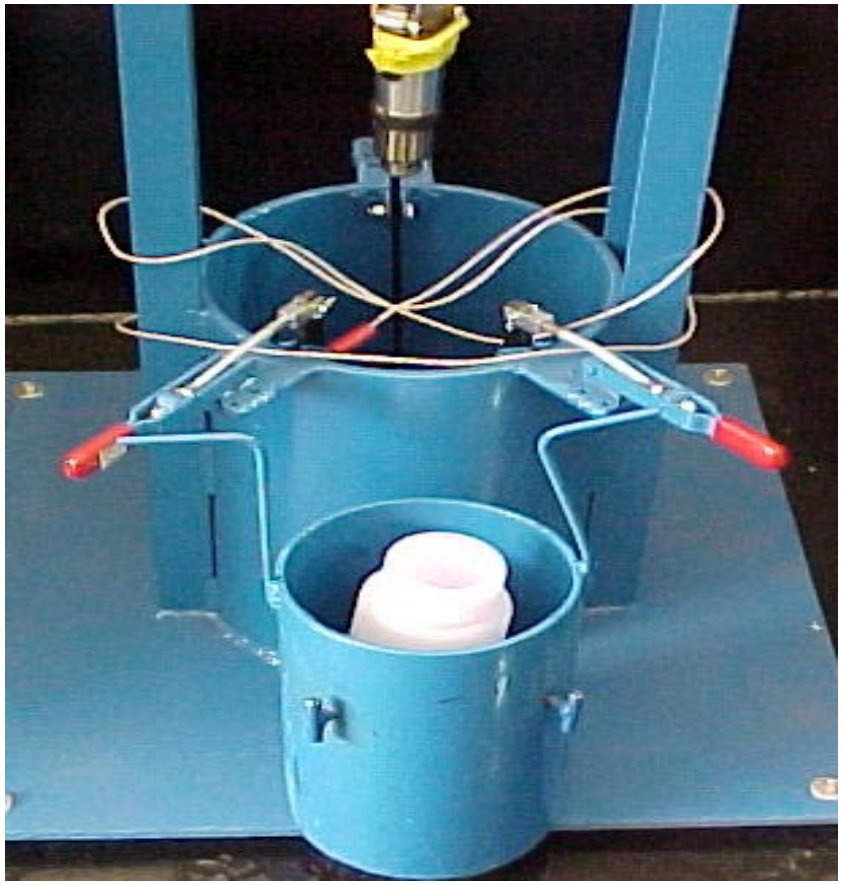

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Problems and Issues

- Regulator doesn't want detonation option used
- Breadth of chemicals from organics to NaK
- Safety basis discussions have led to questions about measure of energies, overpressure, missile throw distances, and interaction with adjacent Cat II facilities
- Explosive models are inaccurate predictors of chemical behavior
- Generators will continue to generate until legacy chemicals are processed

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Status and Schedule

- SER and Readiness Evaluations completed
- 2nd round of discussion underway related to Expert Base or Not
- Complete necessary responses by December 2001
- Complete notifications in December and initiate deactivation at ETTP
- Initiate deactivation at Y-12 February 2002
- Initiate deactivation at ORNL April 2002

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